

We claim:

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1. A synthetic oligonucleotide complementary to a portion of the 5' untranslated region of hepatitis C virus and having a nucleotide sequence selected from the group consisting of SEQ ID NOS: 2, 5, 6, 7, 8, 14, 15, 16, 23, 24, 26, 27, 28, 29, 31, 33, 36, 37, 47, 68, 69, 70, 71, 72, 73, 74, 75, 76, and 77 as set forth in Table 1F and selected from the group consisting of SEQ ID NOS. 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108. 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, and 133 as set forth in Table 1A and Table 1B.
2. A synthetic oligonucleotide comprising a sequence complementary to at least two non-contiguous regions of an HCV messenger or genomic RNA.
3. An oligonucleotide according to claim 2, wherein the sequence is complementary to three non-contiguous regions.
4. A synthetic oligonucleotide according to claim 2, wherein one of the non-contiguous regions is the 5' untranslated region.
5. A synthetic oligonucleotide according to claim 3, wherein one of the non-contiguous regions is the 5' untranslated region.
6. An oligonucleotide according to claim 2 having about 18 to about 24 nucleotides.

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7. An oligonucleotide according to claim 2, wherein one portion of the oligonucleotide has the sequence GGGGUCCUGGAG (SEQ ID NO:47) or has the sequence CAACACUACUCG.
- 5 8. A synthetic oligonucleotide according to claims 1 or 2 which is modified.
- 10 9. An oligonucleotide according to claim 8, wherein the modification comprises at least one internucleotide linkage selected from the group consisting of alkylphosphonate, phosphorothioate, phosphorodithioate, alkylphosphonothioate, phosphoramidate, carbamate, carbonate, phosphate triester, acetamidate, carboxymethyl ester, and combinations thereof.
- 15 10. An oligonucleotide according to claim 9 comprising at least one phosphorothioate internucleotide linkage.
- 20 11. An oligonucleotide according to claim 9, wherein the internucleotide linkages in the oligonucleotide are phosphorothioate internucleotide linkages.
12. An oligonucleotide according to claim 8 which comprises at least one deoxyribonucleotide.
- 25 13. An oligonucleotide according to claim 8 which comprises at least one ribonucleotide.
14. An oligonucleotide according to claim 12 which additionally comprises at least one ribonucleotide.

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15. An oligonucleotide according to claim 14, wherein an oligodeoxyribonucleotide region is interposed between two oligoribonucleotide regions, or the inverted configuration thereof.

5 16. An oligonucleotide according to claim 13, wherein the ribonucleotide is a 2'-O-methyl ribonucleotide.

17. An oligonucleotide according to claim 14, wherein the ribonucleotide is a 2'-O-methyl ribonucleotide.

10 18. An oligonucleotide according to claim 15, wherein the ribonucleotide is a 2'-O-methyl ribonucleotide.

15 19. An oligonucleotide according to claim 14 which comprises at least one 2'-O-methyl ribonucleotide at the 3'-end of the oligonucleotide.


20 20. An oligonucleotide according to claim 19 which further comprises at least one 2'-O-methyl ribonucleotide at the 5'-end of the oligonucleotide.

21. An oligonucleotide according to claim 14 having a nucleotide sequence, selected from the group consisting of SEQ ID NOS: 119-130, as set forth in Table 1A.

25 22. An oligonucleotide according to claim 2 comprising a sequence selected from the group consisting of SEQ ID NOS: 38, 39, 40, 41, 42, 43, 44, 45, 46, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, and 67, as set forth in Table 2.

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23. An oligonucleotide according to claim 2 comprising a sequence selected from the group consisting of SEQ ID NOS:134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146 and 147, as set forth in Table 1C.
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24. An oligonucleotide according to claim 3 comprising a sequence selected from the group consisting of SEQ ID NOS:148, 149, 150, 151, 152, 153, 154, 155, 156, 157, and 158, as set forth in Table ID.
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25. An oligonucleotide according to claim 8 which oligonucleotide is self stabilized by a loop.
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-  26. An oligonucleotide according to claim 24 having a sequence selected from the group consisting of SEQ ID NOS:131, 132 and 133 as set forth in Table 1B.
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27. An oligonucleotide according to claim 8, wherein the modification is selected from the group consisting of a nicked dumbbell, a closed dumbbell, 2', 3' and/or 5' caps, additions to the molecule at the internucleotide phosphate linkage, oxidation, oxidation/reduction, and oxidation/reductive amination, including combination thereof.
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28. An oligonucleotide according to claim 8, wherein at least one nucleoside is substituted by inosine or wherein at least one deoxycytosine is substituted by 5-methyl deoxycytosine.

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29. An oligonucleotide according to claim 28, wherein the oligonucleotide is selected from the group consisting of SEQ ID NOS: 117 (HCV -242, HCV 243, HCV -244) and 118 (HCV -245) as set forth in Table 1A.

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30. An oligonucleotide according to claim 8, wherein the oligonucleotide is modified by incorporating at least one additional triplex-forming strand.

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31. An oligonucleotide according to claim 30 having a nucleotide sequence selected from the group consisting of SEQ ID NOS: 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, and 172 as set forth in Table 1B.

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32. A pharmaceutical composition comprising at least one oligonucleotide according to claim 1 and a pharmaceutically acceptable carrier.

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33. A pharmaceutical composition comprising at least one oligonucleotide according to claim 2 and a pharmaceutically acceptable carrier.

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34. The pharmaceutical composition of claim 32 comprising at least two different oligonucleotides according to claim 1 or claim 2.

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35. A method of inhibiting hepatitis C virus replication in a cell, comprising the step of contacting the cell with an oligonucleotide of claim 1.

36. A method of inhibiting hepatitis C virus replication in a cell, comprising the step of contacting the cell with an oligonucleotide of claim 2.

37. A method of treating hepatitis C virus infection in an animal or human, comprising the step of administering to the animal or human infected with the infection the therapeutic composition of claim 34.

38. A method of detecting the presence of HCV in a sample, comprising the steps of:

(a) contacting the sample with a synthetic oligonucleotide according to claim 1; and

(b) detecting the hybridization of the oligonucleotide to the nucleic acid.

39. A method of detecting the presence of HCV in a sample, comprising the steps of:

(a) contacting the sample with a synthetic oligonucleotide according to claim 2; and

(b) detecting the hybridization of the oligonucleotide to the nucleic acid.

